APPENDIX 5.3
Biological Resources Survey Report

MISSION BAY LANDFILL SITE
BIOLOGICAL RESOURCES REPORT

Prepared for:

SCS Engineers
8799 Balboa Avenue, Suite 290
San Diego, CA 92123

Prepared by:

Merkel & Associates, Inc.
5434 Ruffin Road
San Diego, CA 92123
Contact: Amanda K. Gonzales
Phone: (858) 560-5465
Fax: (858) 560-7779
Investigators: Melissa A. Booker/Division Manager
Kyle L. Ince/Senior Biologist; Amanda K. Gonzales/Associate Biologist

September 2, 2004

Melissa A. Booker, Division Manager

Amanda K. Gonzales, Lead Biologist

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Merkel & Associates, Inc.
September 2, 2004

SUMMARY

Biological surveys were conducted for the Mission Bay Landfill site by Merkel & Associates, Inc. The study area is dominated by Urban/Developed land, Non-native Vegetation, and Disturbed Habitat. Native vegetation present include areas of Coastal Salt Marsh, Mule Fat Scrub, Southern Foredunes, and Coastal Sage Scrub. Other non-native vegetation communities present include Eucalyptus Woodland. Nine sensitive species were detected within the study area: woolly sea-blite (*Suaeda taxifolia*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), Nuttall's lotus (*Lotus nuttallianus*), coast woolly-heads (*Nemacaulis denudata* var. *denudata*), Lewis' evening-primrose (*Camissonia lewisii*), sea dahlia (*Coreopsis maritima*), red sand-verbena (*Abronia maritima*), northern harrier (*Circus cyaneus*), and California least tern (*Sterna antillarum browni*). The purpose of the survey and report is to identify the biological resources on-site. General recommendations include avoiding sensitive habitats, Southern Coastal Salt Marsh, Mule Fat Scrub, Southern Foredunes, and Coastal Sage Scrub. It is also recommended to conduct work outside the breeding season (February 15 – August 15) to avoid potential direct and indirect impacts to breeding bird species.

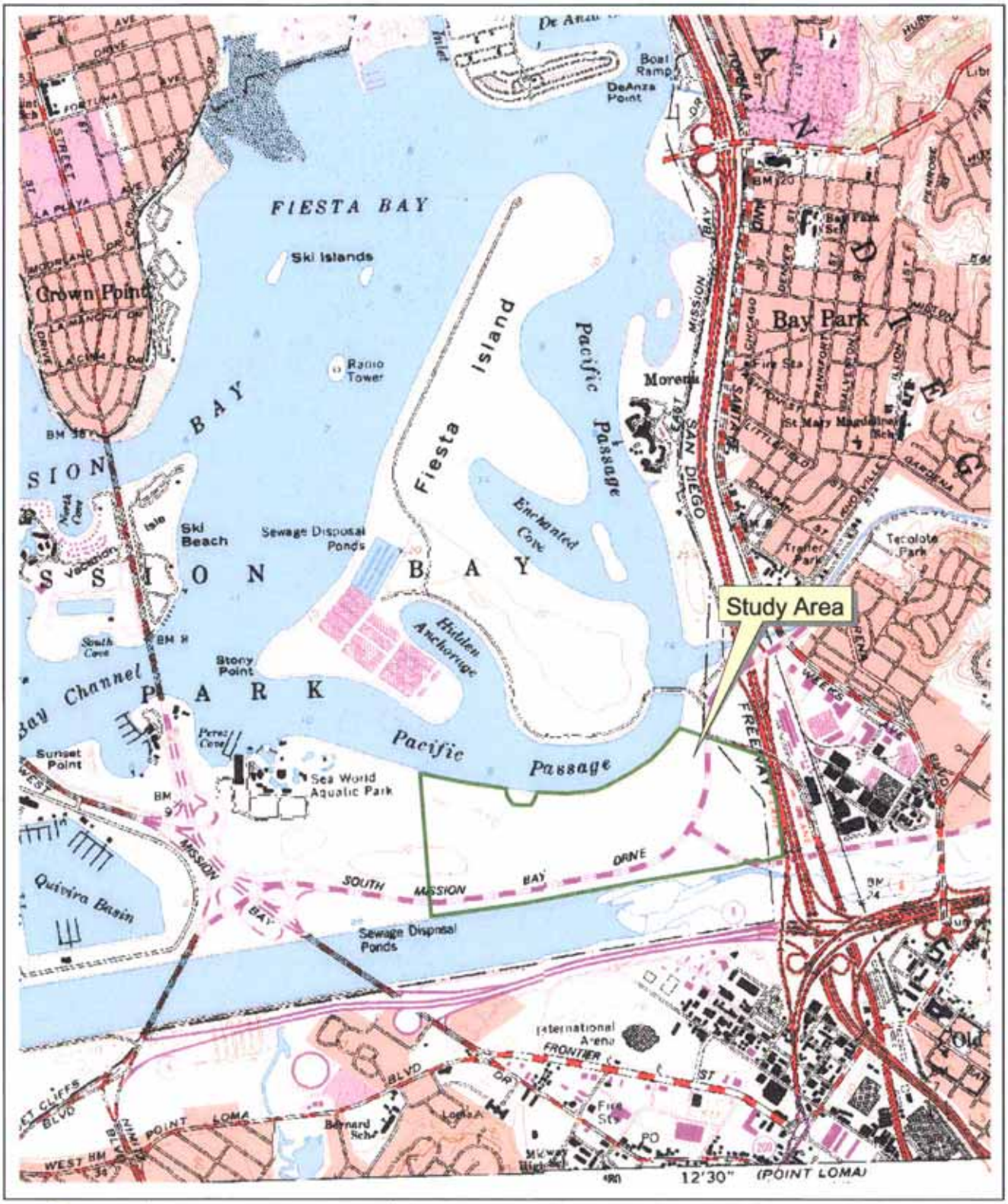
A portion of the Mission Bay Landfill study area is located within a Multi-Habitat Planning Area (MHPA) of the City of San Diego Multiple Species Conservation Program (MSCP) Subarea Plan for habitat conservation (City of San Diego 1997). In addition, the entire site lies within the Coastal Commission Zone.

INTRODUCTION

Merkel & Associates, Inc. (M&A) performed a biological investigation at the Mission Bay Landfill site at the request of Ms. Karen Stackpole of SCS Engineers. The purpose of the surveys and report is to determine the extent of biological resources present within the study area and provide general recommendations to assist in development of a site design.

LOCATION

The Mission Bay Landfill site is located between Sea World and Interstate 5 in the City of San Diego, San Diego County. It is bound to the north by Mission Bay and to the south by the San Diego River. The survey boundary extends approximately 30 feet into the San Diego River. It is situated in unsectioned lands, Range 3 West, Township 16 South, of the San Bernardino Base and Meridian, USGS 7.5' Del Mar, California Quadrangle (Figure 1). A large portion of the study area includes the historic Mission Bay Landfill, which was in operation during the 1950's.



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Project Vicinity Map
Mission Bay Landfill Site

Source: USGS 7.5' La Jolla, CA Quadrangle

Figure 1

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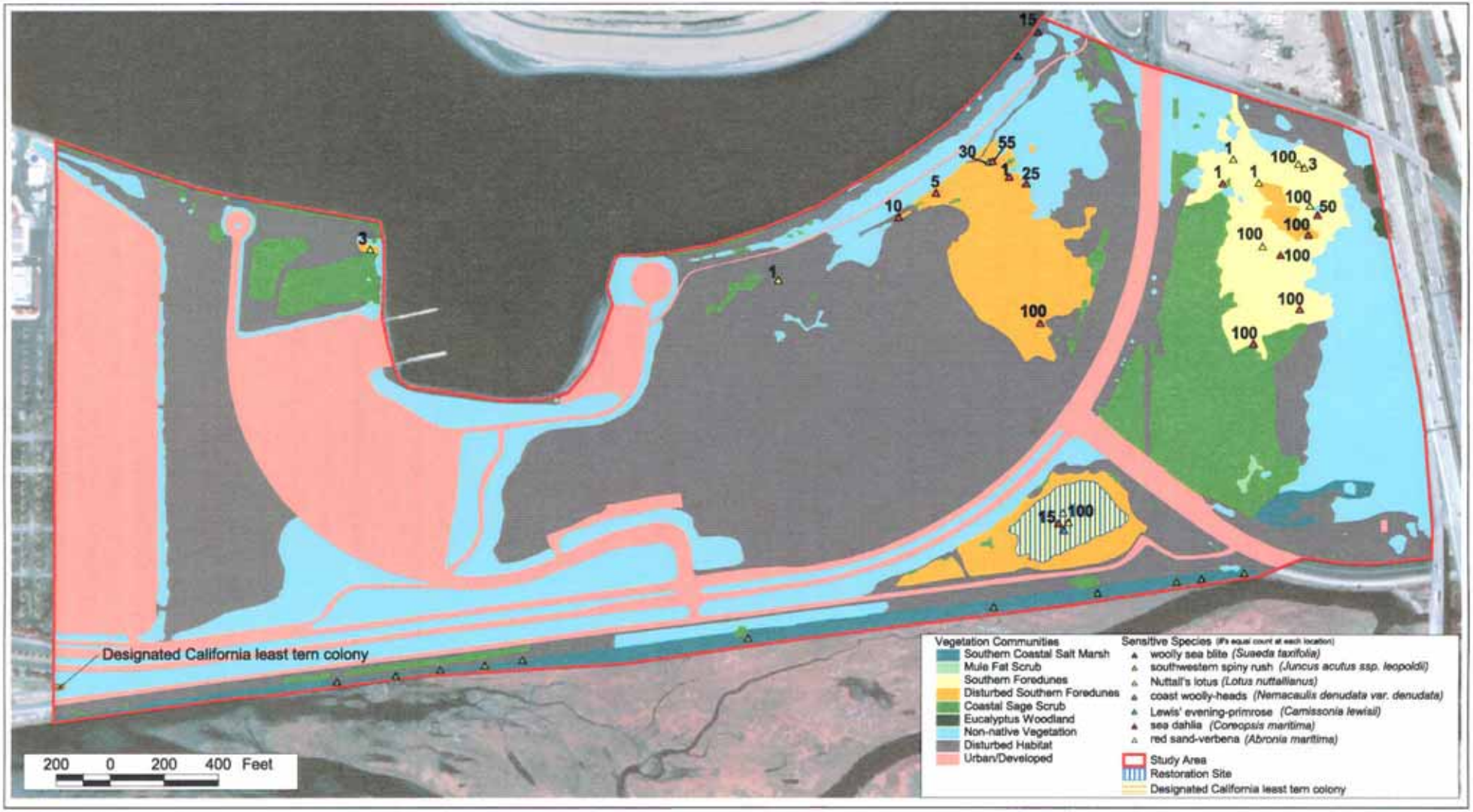
City of San Diego MSCP - MHPA in Project Vicinity
MIssion Bay Landfill Site

Figure 2

Merkel & Associates, Inc.

M&A# 04-056-01



Biological Resources Map

Mission Bay Landfill Site

Figure 3

Merkel & Associates, Inc.

METHODS

The biological survey and analysis were conducted in accordance with the City of San Diego's (City) Guidelines for Conducting Biology Surveys (City of San Diego 2002) and the City's Land Development Code Biology Guidelines (City of San Diego 2000). Field investigations were performed by Merkel & Associates biologists, Melissa A. Booker, Kyle L. Ince, and Amanda K. Gonzales during the month of May and June 2004. Table 1 is a summary of field investigations. Vegetation communities were initially plotted on a color aerial photograph, then digitized. General biological surveys included directed searches for sensitive species. Plant communities within the specified study area were surveyed on-foot. Plant identifications were either resolved in the field or later determined through verification of voucher specimens. Wildlife species were determined through direct observation, identification of songs, call notes or alarm calls, or through sign. Appendices 1 and 2 provide a list of the plant and animal species detected, respectively.

Table 1. Summary of Biological Field Investigations

Date	Survey	Time	Conditions (start-end)	Biologist(s)
05/20/04	General Biological Field Investigation/Sensitive Flora Investigation	1030-1630	Weather: 50% cc Wind: 5 mph Temp.: 66°F	Kyle L. Ince Amanda K. Gonzales
05/26/04	General Biological Field Investigation	0900-1550	Weather: Overcast Wind: 0-3 mph Temp.: 70°F	Amanda K. Gonzales
05/25/04	Nesting Bird Survey	0800-1200	Weather: Overcast Wind: 2 mph Temp.: 66°F	Melissa A. Booker
06/03/04	General Biological Field Investigation/Sensitive Flora Investigation	1100-1300	Weather: Overcast Wind: 2 mph Temp.: 66°F	Kyle L. Ince Amanda K. Gonzales

cc = cloud cover; mph =miles per hour; F = Fahrenheit

Scientific nomenclature used in this report is from the following references: vegetation, Holland (1986) and Oberbauer (1996); flora, Hickman (1993) and Baldwin *et al.* (2003); butterflies, Opler and Wright (1999); amphibians and reptiles, Crother *et al.* (2001 and 2003); birds, American Ornithologists' Union (1998 and 2003); and mammals, Wilson and Reeder (1993).

SURVEY LIMITATIONS

Biological inventories are generally subject to various limitations. Depending on the season during which the field survey is conducted, some amphibians, reptiles, migratory birds, mammals, and annual plants may be difficult to inventory. Database [*e.g.*, California Natural Diversity Database (CNDDB) and U.S. Fish and Wildlife Service (USFWS) GIS database] and literature reviews were performed to compensate for potential limitations.

RESULTS

PHYSICAL CHARACTERISTICS

The Mission Bay Landfill site lies between Sea World and Interstate 5. The northern portion of the site is bound by Mission Bay while the southern portion of the site is bound by the San Diego River. The site's elevation ranges from 0 to 20 feet above mean sea level and consists predominately of level ground. The underlying geology of the area is mapped as Alluvium (Strand 1962). The soil mapped on-site is Made land (Bowman *et al.* 1973). This soil series consists of smooth, level areas that have been filled with excavated and transported soil material, paving material, and soils material dredged from the bay (Bowman *et al.* 1973). This material was used to cap the landfill following its abandonment in the late 1950's. The Mission Bay Landfill site is the largest area that is created of Made land in the vicinity of San Diego (Bowman *et al.* 1973).

Two portions of the Mission Bay Landfill site lie within a Multi-Habitat Planning Area (MHPA) of the City's Multiple Species Conservation Program (MSCP) Subarea Plan (City of San Diego 1997). One area is located within the southwestern corner of the site; a designated California least tern (*Sterna antillarum browni*) nesting colony is located here. The second area is located within the southeastern portion of the study area. This area was created several years ago as a restoration site containing the sensitive species Nuttall's lotus (*Lotus nuttallianus*) and coast woolly-heads (*Nemacaulis denudata* var. *denudata*). Figure 2 depicts the project site in relation to the MHPA.

The study area is within the Coastal Overlay zone, as revised pursuant to Public Resources Code Section 30150, an amendment to the Coastal Act of 1976, effective January 1, 1980.

VEGETATION COMMUNITIES AND BOTANICAL RESOURCES

Eight vegetation types were delineated on the site: Southern Coastal Salt Marsh, Mule Fat Scrub, Southern Foredunes, Coastal Sage Scrub, Eucalyptus Woodland, Non-native Vegetation, Disturbed Habitat, and Urban/Developed land. Figure 3 shows the vegetation communities mapped on-site, and Table 2 summarizes the acreage of each vegetation community on-site. The following text describes each in detail. A list of flora species observed or detected is included as Appendix 1.

Table 2. Summary of Vegetation Communities within the Study Area

Vegetation Community/ Wildlife Habitat	Upland/Wetland Designation	Area (acre)
Southern Coastal Salt Marsh (Holland/Oberbauer Code 52120)	Wetland Habitat	5.46
Mule Fat Scrub (Holland/Oberbauer Code 63310)	Wetland Habitat	0.10
Southern Foredunes (Holland/Oberbauer Code 21230)	Upland Habitat	16.92
Coastal Sage Scrub (Oberbauer Code 32000)	Upland Habitat	14.01
Eucalyptus Woodland (Holland/Oberbauer Code 11100)	Upland Habitat	0.22
Non-native Vegetation (Oberbauer Code 11000)	Upland Habitat	41.82
Disturbed Habitat (Oberbauer Code 11300)	Upland Habitat	69.93
Urban/Developed (Oberbauer Code 12000)	Upland Habitat	43.41
Total Study Area		**191.87**

Southern Coastal Salt Marsh (Holland/Oberbauer Code 52120)

Southern Coastal Salt Marsh is located along the northern and southern boundary of the study area. This vegetation community consists of marsh jaumea (*Jaumea carnosa*), pickleweed (*Salicornia virginica*), alkali weed (*Cressa truxillensis*), and alkali heath (*Frankenia salina*). Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*) and woolly sea-blite (*Suaeda taxifolia*), two sensitive species, are also located within this vegetation community. Southwestern spiny rush is located along the southern boundary within the San Diego River. Woolly sea-blite was identified sporadically along the northern and southern boundary of the study area, either within the riprap or just above it. A relatively moderate size patch of Coastal Salt Marsh occurs in an alkali swale located just north of Friars Road. Although dominated by alkali heath, this particular area contains a moderate amount of hottentot-fig (*Carpobrotus edulis*), an invasive exotic species. Southern Coastal Salt Marsh is classified as a coastal wetland habitat type according to the City's MSCP Subarea Plan (City of San Diego 1997).

Mule Fat Scrub (Holland/Oberbauer Code 63310)

Scattered patches of Mule Fat Scrub occur throughout the study area. This vegetation community consists of small groupings of mule fat (*Baccharis salicifolia*). Mule Fat Scrub is considered to be a wetland habitat type according to the City of San Diego's MSCP Subarea Plan (City of San Diego 1997).

Southern Foredunes (Holland/Oberbauer Code 21230)

Southern Foredunes vegetation is predominately located within the eastern portion of the study area. This vegetation community consists of species such as California sun cup (*Camissonia bistorta*), beach evening primrose (*Camissonia cheiranthifolia* ssp. *suffruticosa*), spiny threecornerjack (*Emex spinosa*), and sea-rocket (*Cakile maritima*). Two sensitive species, Nuttall's lotus and coast woolly-heads were located in abundant populations within this habitat. In 1998 Gray D. Suttle, complied a map identifying Nuttall's lotus populations within the Mission Bay area. He determined that the populations located on the Mission Bay Landfill site possibly contain the largest Nuttall's lotus population in the United States.

A foredunes restoration area is located on the eastern portion of the site, south of Sea World Drive, west of Friars Road, and north of the San Diego River. Four sensitive species are located within this area: Lewis' evening-primrose (*Camissonia lewisii*), Nuttall's lotus, coast woolly-heads, and red sand-verbena (*Abronia maritima*). Areas mapped as Disturbed Southern Foredunes include foredune species mixed with a high percent cover of exotic species such as hottentot-fig. Southern Foredunes is a Tier I habitat under the City's MSCP Subarea Plan (City of San Diego 1997).

Coastal Sage Scrub (Oberbauer Code 32000)

Coastal Sage Scrub is located throughout the Mission Bay Landfill project site. This vegetation community is comprised of mostly drought deciduous shrubs, which range from 2 to 4 feet in height. Species present include California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), broom baccharis (*Baccharis sarothroides*), flat-top buckwheat (*Eriogonum fasciculatum* var. *foliolosum*), California encelia (*Encelia californica*), goldenbush (*Isocoma menziesii* var. *menziesii*), quailbush (*Atriplex lentiformis* ssp. *breweri*), and coastal deerweed (*Lotus scoparius* var. *scoparius*). Much of this vegetation community is comprised of monotypic stands of individual sage

scrub species. The largest area of Coastal Sage Scrub occurs north of Friars Road, east of Sea World Drive, and west of Interstate 5. This area is dominated by broom baccharis. The three smaller areas mapped as sage scrub within this same area are dominated by flat-top buckwheat. Several small areas north of Sea World Drive are dominated by broom baccharis while other areas are dominated by a combination of goldenbush and broom baccharis, or a combination of goldenbush and California encelia. The areas along the northern boundary that are mapped as sage scrub are comprised of a combination of goldenbush and California encelia. Many of the areas located south of Sea World Drive and north of the San Diego River are comprised of a combination of goldenbush and California encelia. Coastal Sage Scrub is a Tier II habitat type under the City's MSCP Subarea Plan (City of San Diego 1997).

Non-native Vegetation (Oberbauer Code 11000)

The study area includes various landscaped areas maintained by the City of San Diego Parks and Recreation. These areas contain commonly planted exotic and native drought tolerant plant species. The native species present on-site include Torrey pine (*Pinus torreyana*) and lemonadeberry (*Rhus integrifolia*). Non-native species include purple rock-rose (*Cistus incanus*), Perez rosemary (*Limonium perezii*), pride of Madeira (*Echium fastuosum*), Brazilian pepper tree (*Schinus terebinthifolius*), Sydney wattle (*Acacia longifolia*), Mexican palo verde (*Parkinsonia aculeata*), and ngaio (*Myoporum laetum*). The eastern portion of the site is dominated by escaped invasive species such as hottentot-fig and ngiao. Non-native Vegetation is a Tier IV habitat under the City's MSCP Subarea Plan (City of San Diego 1997).

Eucalyptus Woodland (Oberbauer Code 11100)

Eucalyptus Woodland is located within the northeastern corner of the study area. The dominant species within this vegetation community is eucalyptus (*Eucalyptus* spp.). These non-native species release allelopathic chemicals from their stems and leaves, which precludes most understory growth. The understory includes mostly leaf litter or in some cases exotic ground cover species such as hottentot-fig (*Carpobrotus edulis*). Eucalyptus Woodland is a Tier IV habitat under the City's MSCP Subarea Plan (City of San Diego 1997).

Disturbed Habitat (Oberbauer Code 11300)

Disturbed Habitat has been mapped for those areas which are used as access paths for vehicles and pedestrians. These areas typically have less then 30 percent ground cover attributable to annual, non-native grasses. These areas consist of bare ground or non-native ruderal species such as Russian thistle (*Salsola tragus*) and Australian saltbush (*Atriplex semibaccata*). Sea dahlia (*Coreopsis maritima*), a sensitive flora species was identified within this habitat. A designated California least tern colony is located within the southwestern corner of the study area. Approximately 30 feet of the designated preserve is located on-site; however, the actual nest ground appears to be located further west of the study boundary. Disturbed Habitat is a Tier IV habitat under the City's MSCP Subarea Plan (City of San Diego 1997).

Urban/Developed (Oberbauer Code 12000)

Urban/Developed land is comprised of paved streets as well as the Mission Bay Boat Ramp and its facilities. A beach was also created several years ago and has been mapped as Urban/Developed land since it is used by the public as a recreational area. Urban/Developed land has no classification.

ENVIRONMENTALLY SENSITIVE LANDS

Sensitive biological resources are uniquely defined by local jurisdictions. Since the study area lies within the City of San Diego, this report relies upon the City of San Diego's definition of "sensitive biological resources", as documented in the San Diego Municipal Code, Land Development Procedures (Chapter 11, Article 3, and Division 1). Per this definition, sensitive biological resources means upland and/or wetland areas that meet any one of the following criteria:

(a) Lands that have been included in the City of San Diego Multiple Species Conservation Program Preserve;
(b) Wetlands;
(c) Lands outside the MHPA that contain Tier I Habitats, Tier II Habitats, Tier IIIA Habitats, or Tier IIIB Habitats;
(d) Lands supporting species or subspecies listed as rare, endangered, or threatened under Section 670.2 or 670.5, Title 14, California Code of Regulations, or the Federal Endangered Species Act, Title 50, Code of Federal Regulations, Section 17.11 or 17.12, or candidate species under the California Code of Regulations;
(e) Lands containing habitats with Narrow Endemic Species as listed in the Biology Guidelines in the Land Development manual; or
(f) Lands containing habitats of covered species as listed in the Biology Guidelines in the Land Development Manual.

Following the above criteria, the following sensitive habitats are found within the study area:

- Southern Coastal Salt Marsh
- Mule Fat Scrub
- Southern Foredunes
- Coastal Sage Scrub

ZOOLOGICAL RESOURCES-FAUNA

Appendix 2 contains a complete list of all fauna species observed or detected on site.

Amphibians and Reptiles

No amphibians were found within the study area during the fieldwork. However, species such as the Pacific treefrog (*Pseudacris regilla*) and garden slender salamander (*Batrachoseps major major*) have a potential to occur on-site due to the presence of suitable habitat.

Western fence lizard (*Sceloporus occidentalis*) and side-blotched lizard (*Uta stansburiana*) were the only reptiles observed within the study area during the surveys. However, other relatively common species, such as the California kingsnake (*Lampropeltis getula californiae*), San Diego gopher snake (*Pituophis catenifer*), Coronado skink (*Eumeces skiltonianus interparietalis*), and southern alligator lizard (*Elgaria multicarinata*) have potential to be found on-site.

Birds

Twenty-four species of birds were observed or detected on-site during the field surveys. These included great egret (*Ardea alba*), snowy egret (*Egretta thula*), killdeer (*Charadrius vociferous*), western gull (*Larus occidentalis*), Forster's tern (*Sterna forsteri*), mourning dove (*Zenaida macroura*), northern rough-winged swallow (*Stelgidopteryx serripennis*), bushtit (*Psaltriparus minimus*), northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), red-tailed hawk (*Buteo jamaicensis*), western meadowlark (*Sturnella neglecta*), and horned lark (*Eremophila alpestris*). Two sensitive species were observed on-site, the northern harrier (*Circus cyaneus*) and California least tern.

During the nesting bird survey, horned larks and western meadowlark were observed nesting throughout Disturbed Habitat located in the center of the study area. The nesting area is located on the north side of Sea World Drive and south of the Urban/Developed pedestrian trail that parallels Mission Bay. Killdeer fledglings were also observed within the vicinity of the recreational beach and picnic area.

Mammals

Two mammals were observed or detected on-site. They included the California ground squirrel (*Spermophilus beecheyi*) and desert cottontail (*Sylvilagus audubonii*). Other species expected to occur include the black rat (*Rattus rattus*) and deer mouse (*Peromyscus maniculatus*).

Wildlife Corridors

Wildlife corridors are important in preserving species diversity. In the absence of corridors, habitats become isolated islands surrounded by development. Fragmented habitats support lower numbers of species and increase the likelihood of extinction for species restricted to small areas. Connections between areas of open space are integral to maintaining biological diversity and population viability. The City of San Diego does not provide a definition of corridor in the Land Development Terms or Biological Guidelines. For the purposes of this report, we have defined wildlife corridor as follows: a linear landscape feature utilized by resident or transient wildlife for movement between two patches of habitat.

As stated above, the Mission Bay Landfill site is bound to the south by the San Diego River and approximately 30 feet of the study area occurs within the river. To the west the river opens in to the ocean. The San Diego River functions as a regional corridor supporting movement of individuals (and thus genetic material). This corridor predominantly supports the movement of avian species as both wintering and breeding grounds. The on-site habitat south of Sea World Drive contributes to this regional corridor. The adjacent upland habitat has the potential to serve as foraging grounds for sensitive species such as the Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) and the silvery legless lizard (*Anniella pulchra pulchra*). Mud flats within the river could provide foraging habitat for the American peregrine falcon (*Falco peregrinus anatum*) or light-footed clapper rail (*Rallus longirostris levipes*), while beach areas would serve as foraging habitat for the western snowy plover (*Charadrius alexandrinus nivosus*).

RARE, THREATENED, ENDEMIC, AND/OR SENSITIVE SPECIES OR MSCP COVERED SPECIES

Sensitive Flora

Sensitive plants include those listed by USFWS (1999 and 2004b), California Department of Fish and Game (CDFG) (2004b), the California Native Plant Society (CNPS) (2001), and MSCP Narrow Endemic Species (City of San Diego 1997). The CNDDB lists Nuttall's lotus as the only sensitive species on-site (CDFG 1997 and 2003). Just north of the site, on Fiesta Island, the CNDDB lists the following sensitive species: estuary sea-blite (*Suaeda esteroa*) and Coulter Goldfields (*Lasthenia glabrata* ssp. *coulteri*).

Seven sensitive plant species were identified within the project site: woolly sea-blite, southwestern spiny rush, Nuttall's lotus, coast woolly-heads, Lewis' evening-primrose, sea dahlia, and red sand-verbena. The locations of each species are described within the above vegetation categories. The locations and approximated densities of each species are shown on Figure 3 and discussed in Table 3.

Although not observed on-site nor a sensitive species, eelgrass (*Zostera marina*) occurs within the intertidal or subtidal areas adjacent to the study area boundary, both within Mission Bay and at the western edge of the study area in the San Diego River. Eelgrass is considered to be a habitat forming species that creates unique biological environments and has been given special status by the Clean Water Act, 1972 (as amended), Section 404(b)(1) "Guidelines for Specification of Disposal Sites for Dredged or Fill Material," Subpart E, "Potential Impacts on Special Aquatic Sites." Sensitive plants not observed on-site but potentially present include: coastal dunes milk-vetch (*Astragalus tener* var. *titi*), salt marsh bird's-beak (*Cordylanthus maritimus* ssp. *maritimus*), coast wallflower (*Erysimum ammophilum*), Palmer's frankenia (*Frankenia palmeri*), Coulter goldfields (*Lasthenia glabrata* ssp. *coulteri*), and estuary sea-blite (*Suaeda esteroa*). Sensitive species are addressed in Table 4, as to status and total individuals observed on-site.

Sensitive Fauna

Sensitive wildlife species include those listed by USFWS (1999 and 2004a), CDFG (2004a), and those considered regionally or locally sensitive by the City of San Diego, local jurisdictions, and private groups. The CNDDB does not list any sensitive fauna species on-site, however, it does list the Belding's savannah sparrow and light-footed clapper rail adjacent to the site within the San Diego River. In addition, just north of the site on Fiesta Island, the CNDDB has the burrowing owl and California least tern mapped.

Sensitive species observed on-site during M&A surveys included: northern harrier and California least tern. The northern harrier was observed flying throughout the Disturbed Habitat, possibly foraging. The California least tern was observed flying north over the habitat restoration site. These species are addressed in Table 5.

Although not observed during the field surveys, the following sensitive wildlife species are known from the region and potentially occur on-site based upon the presence of suitable habitat and are covered under the MSCP: San Diego horned lizard (*Phrynosoma coronatum blainvillei*), California brown pelican (*Palcanus occidentalis californica*), Canada goose (*Branta canadensis*), American peregrine falcon, light-footed clapper rail, western snowy plover, long-billed curlew (*Numenius americanus*), elegant tern (*Sterna elegans*), burrowing owl (*Athene cunicularia hypugaea*), Belding's savannah sparrow, and large-billed savannah sparrow (*Passerculus sandwichensis*

rostratus). Other species potentially present but not covered by the MSCP include: globose dune beetle (*Coelus globosus*) and silvery legless lizard. Table 6 addresses potentially present, but unobserved sensitive fauna species.

According to a City Parks and Recreation maintenance worker, a burrowing owl was observed during the winter season on-site. Although the burrow was not located, it was described to be located just west of the recreational beach area. According to the CNDDB, burrowing owl locations are known from the immediate vicinity, however, none were observed on-site.

Table 3. On-site Sensitive Flora Species

Scientific Name	Common Name	Habitat	Observed Total	Federal Status	State Status	CNPS Status	MSCP Status
Suaeda taxifolia	woolly sea-blite	Common in areas mapped as Coastal Salt Marsh; expected elevation 0-50 meters. Shrub (evergreen), blooms January-December.	Count not obtained	None	None	List 4	None
Juncus acutus ssp. *leopoldii*	southwestern spiny rush	Located within the San Diego River. Area mapped as Coastal Salt Marsh; expected elevation 3-900 meters. Perennial herb, (rhizomatous) blooms May-June.	Exact count not obtained	None	None	List 4	None
Lotus nuttallianus	Nuttall's lotus	Located in areas mapped as Southern Foredunes. Likely more abundant during good rain fall years. Has been reported to occur in the thousands on-site; expected elevation 0-10 meters. Annual herb, blooms March-June.	439	None	None	List 1B	Covered
Nemacaulis denudata var. *denudata*	coast woolly-heads	Located in areas mapped as Southern Foredunes. Likely more abundant during a good rain fall year; elevation 0-100 meters. Annual herb, blooms April-September.	662	None	None	List 1B	None
Camissonia lewisii	Lewis' evening-primrose	Common in Southern Foredunes restoration site; expected elevation 0-300 meters.	Count not obtained	None	None	List 3	None
Coreopsis maritima	sea dahlia	Mapped along the border between Disturbed Habitat and Southern Coastal Salt Marsh; expected elevation 5-150 meters. Perennial herb, blooms March-May.	15	None	None	List 2	None
Abronia maritima	red sand-verbena	Planted in foredunes restoration site; expected elevation range from 0-100 meters; blooms from February-November.	Count not obtained	None	None	List 4	None

The CNPS status/list definitions are defined in CNPS Inventory of Rare and Endangered Plants in California (CNPS 2001); Covered = MSCP Covered Species

Table 4. Potentially Present Sensitive Flora Species

Scientific Name	Common Name	Suitable on-site Habitat	Probability of Occurrence	Federal Status	State Status	CNPS Status	MSCP Status
Astragalus tener var. *titi*	coastal dunes milk-vetch	Southern Foredunes; expected elevation 1-50 meters. Annual herb, blooms March-May. Presumed to be extirpated from Southern California.	Very low	FE	SE	List 1B	Covered
Cordylanthus maritimus ssp. *maritimus*	salt marsh bird's-beak	Southern Coastal Salt Marsh; expected elevation 0-30 meters. Annual herb (hemiparasitic), blooms May-October. However, only 2 populations known from San Diego County, Chula Vista and Imperial Beach.	Low	FE	SE	List 1B	Covered
Erysimum ammophilum	coast wallflower	Southern Foredunes and sandy openings; blooms February-June. Sought but not found.	Low	None	None	List 1B	Covered
Frankenia palmeri	Palmer's frankenia	Southern Coastal Salt Marsh; expected elevation 0-10 meters. Perennial herb blooms May-July. Only known native populations are at Gunpower Point in Chula Vista. Planted at Crown Point in restored Coastal Salt Marsh habitat.	Very Low	None	None	List 2	None
Lasthenia glabrata ssp. *coulteri*	Coulter goldfields	Southern Coastal Salt Marsh along the upper tidal zones; expected elevation 1-1220 meters. Annual herb blooms February-June.	Low	None	None	List 1B	None
Suaeda esteroa	estuary sea-blite	Southern Coastal Salt Marsh; expected elevation 0-50 meters. Perennial herb, blooms May-October.	Moderate	None	None	List 1B	None

FE = Federal Endangered, SE = California (State) Endangered, ST = California (State) Threatened; The CNPS status/list definitions are defined in CNPS Inventory of Rare and Endangered Plants in California (CNPS 2001); Covered = MSCP Covered Species

Table 5. Sensitive Fauna Species Identified On-site

Scientific Name	Common Name	Habitat	Observed Total	Federal Status	State Status	MSCP Status
Circus cyaneus	northern harrier	Observed foraging throughout the Disturbed Habitat. Also occurs in fresh and saltwater mashes.	1	None	None	Covered
Sterna antillarum browni	California least tern	Observed flying north over the restoration site. Common in Southern Coastal Salt Marsh for foraging and breeding purposes. Several more were observed southwest of the site within the San Diego River.	1	FE	SE	Covered

FE = Federal Endangered, SE = California (State) Endangered, Covered = MSCP Covered Species

Table 6. Potentially Present Fauna Species

Scientific Name	Common Name	Suitable Habitat	Probability of Occurrence	Federal Status	State Status	MSCP Status
Phrynosoma coronatum blainvillei	San Diego horned lizard	Prefers Coastal Sage Scrub.	Low	FSC	None	Covered
Palcanus occidentalis californica	California brown pelican	Possibly rousts on mud flats and forages on-site.	High	FE	SE	Covered
Branta canadensis	Canada goose	Winter visitor to the San Diego County area. Possible forages on mudflats within the San Diego River.	High	None	None	Covered
Falco peregrinus anatum	American peregrine falcon	Possibly forages around mudflats within the San Diego River as well as along the recreational beach area.	Moderate	FSC	SE	Covered
Rallus longirostris levipes	light-footed clapper rail	Known to nest within Southern Coastal Salt Marsh communities that support California Cord Grass *(Spartina foliosa)*. Possibly nests in the San Diego River.	High	FE	SE	Covered

Charadrius alexandrinus nivosus	western snowy plover	Possibly nests along the recreational beach area and forage within the San Diego River during the winter season.	High	FT	None	Covered
Numenius americanus	long-billed curlew	Winter visitor in San Diego County, possibly found within Southern Coastal Salt Marsh.	High	FSC	None	Covered
Sterna elegans	elegant tern	Possibly congregate on mudflats and forage over open water within Mission Bay.	Moderate	FSC	None	Covered
Athene cunicularia hypugaea	burrowing owl	Possibly nests within Coastal Foredunes or any open area where California ground squirrel *(Spermophilus beecheyi)* burrows are located.	High	FSC	None	Covered
Passerculus sandwichensis beldingi	Belding's savannah sparrow	Known to nest in *Salicornia* sp. within the Southern Coastal Salt Marsh communities. Possibly within the San Diego River.	Moderate	None	SE	Covered
Passerculus sandwichensis rostratus	large-billed savannah sparrow	Migrant species possibly found within Southern Coastal Salt Marsh.	Moderate	None	None	Covered
Coelus globosus	globose dune beetle	Southern Foredunes beneath the sand surface and dune vegetation.	Low	FSC	None	None
Anniella pulchra pulchra	silvery legless lizard	Shows a preference for areas of leaf litter and loose soil within Southern Foredunes and sandy benches.	High	FSC	None	None

FE = Federal Endangered, FT = Federal Threatened, SE = California (State) Endangered, St = California (State) Threatened, FSC = Federeal Species of Concern.

DISCUSSION

WETLANDS

A jurisdictional wetland delineation was not performed as part of the survey work for the site. However, based upon the vegetation present and other site conditions observed, it is presumed that the areas of Southern Coastal Salt Marsh and Mule Fat Scrub, are the only jurisdictional habitats on-site. All areas of Southern Coastal Salt Marsh and Mule Fat Scrub are presumed to be jurisdictional under the City and the California Coastal Commission (CCC). Without conducting a jurisdictional wetland delineation, it cannot be determined how much of this habitat is jurisdictional under the U.S. Army Corps of Engineers (ACOE). CDFG would only have jurisdiction over non-tidal wetlands (*i.e.* San Diego River).

RECOMMENDATIONS TO AVOID, MITIGATE, OR REDUCE IMPACTS

In the event of future site development, significant impacts to vegetation communities would require avoidance, reduction, and/or mitigation to reduce impacts to a level below significant (per CEQA). Impacts to sensitive species should be avoided to the extent feasible. If impacts are unavoidable the significance of the impacts would need to be assessed based on quantified, expected direct impacts, and any anticipated indirect impacts. Similar to vegetation communities, significant impacts to species would require mitigation that reduces impacts to a level below significant (per CEQA).

Any impacts to wetlands would be considered significant. Impacts require a minimum of 1:1 replacement creation to meet federal and state, no-net-loss standards. Additional mitigation may be required in the form of enhancement or restoration. Typically, mitigation is required to take place within the City or at minimum, within the affected watershed.

To the extent possible, future development should avoid impacts to sensitive habitats including Southern Coastal Salt Marsh, Mule Fat Scrub, Southern Foredunes, and Coastal Sage Scrub. By avoiding these habitats, impacts to sensitive species, including woolly sea-blite, southwestern spiny rush, Nuttall's lotus, coast woolly-heads, Lewis' evening-primrose, sea dahlia, and red sand-verbena would also be avoided.

It is recommended that a jurisdictional wetland delineation be performed to determine how much of Southern Coastal Salt Marsh and Mule Fat Scrub are jurisdictional under the CCC, ACOE, CDFG, and the City.

It is also recommended that work be conducted outside the breeding season (typically February 15 – August 15) to avoid potential direct or indirect impacts to breeding bird species. Burrowing owl surveys should also be performed according to the most recent guidelines used by the California Department of Fish and Game, as noted by the Burrowing Owl Survey Protocol and Mitigation Guidelines prepared by the California Burrowing Owl Consortium in April 1993.

FEDERAL AND STATE PERMITTING REQUIREMENTS

Under section 404 of the Clean Water Act, placement of dredged or fill material within waters of the U.S. requires a permit issued by ACOE. The Clean Water Act also requires the issuance of a state water quality certification or waiver under Section 401 to be issued by the Regional Water Quality Control Board for any action that may result in degradation of the waters of the State. In addition to the federal act requirements, activities at the site may also require a Coastal Development Permit issued through the CCC.

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APPENDICIES

APPENDIX 1. FLORA SPECIES OBSERVED ON-SITE

Habitat Types:

S = Southern Coastal Salt Marsh
A = Mule Fat Scrub
F = Southern Foredunes
D = Coastal Sage Scrub
N = Non-native Vegetation
E = Eucalyptus Woodland
H = Disturbed Habitat
U = Urban/Developed

* = Denotes non-native flora species.

Scientific Name	Common Name	Habitat
GYMNOSPERMS		
Pinaceae - Pine Family		
Pinus torreyana Carr.	Torrey pine	N
Pinus sp.	pine	N
DICOTYLEDONS		
Aizoaceae – Fig-Marigold Family		
**Carpobrotus edulis* (L.)N.E. Brit.	hottentot-fig	F,H
**Mesembryanthemum crystallinum* L.	crystalline iceplant	H
**Mesembryanthemum nodiflorum* L.	slender-leaved iceplant	H
Anacardiaceae - Sumac Family		
Malosma laurina (Nutt.)Abrams	laurel sumac	H
Rhus integrifolia (Nutt.)Brewer & S. Watson	lemonadeberry	N
**Schinus terebinthifolius* Raddi	Brazilian pepper tree	N
Asteraceae - Sunflower Family		
Amblyopappus pusillus H. & A.	pineapple weed	F,H
Ambrosia psilostachya DC.	western ragweed	S
Artemisia californica Less.	California sagebrush	D
Baccharis pilularis DC.	coyote brush	D,H
Baccharis salicifolia (R. & P.)Pers.	mule fat	A
Baccharis sarothroides Gray	broom baccharis	F,H,D
**Bellis perennis* L.	lawndaisy	H
**Centaurea melitensis* L.	tocalote	F,H
**Chrysanthemum coronarium* L.	garland	H
**Conyza bonariensis* (L.)Cronq.	flax-leaf fleabane	H
Coreopsis maritima (Nutt.) Hook. f.	sea dahlia	H
**Cotula coronopifolia* L.	brass-buttons	S
Encelia californica Nutt.	California encelia	D
Gnaphalium luteo-album L.	cudweed	N
Heterotheca grandiflora Nutt.	telegraph weed	H
Isocoma menziesii (Hook. & Arn.)Nesom var. *menziesii*	goldenbush	D,H
Jaumea carnosa (Less.) A. Gray	marsh jaumea	S
**Picris echioides* L.	bristly ox-tongue	H
**Sonchus oleraceus* L.	common sow thistle	H
Boraginaceae - Borage Family		
**Echium fastuosum* L.	pride of madeira	N
Heliotropium curvassavicum L.	salt heliotrope	H,S
Brassicaceae - Mustard Family		
**Cakile maritima* Scop.	sea-rocket	F
**Hirschfeldia incana* (L.)Lagr.-Fossat	short-pod mustard	H
Lepidium lasiocarpum Torrey & Gray var. *lasiocarpum*	sand peppergrass	H

Scientific Name	Common Name	Habitat
**Sisymbrium irio* L.	London rocket	H
Caryophyllaceae - Pink Family		
**Spergula arvensis* L.	stickwort starwort	H
Chenopodiaceae - Goosefoot Family		
Atriplex lentiformis (Torr.) S. Watson ssp. *breweri* (S. Watson) H. M. Hall & Clem	quailbush	D
**Atriplex semibaccata* R. Br.	Australian saltbush	H
**Bassia hyssopifolia* (Pall.)Kuntze	five-hook bassia	H
**Chenopodium album* L.	lamb's quarters	H
Salicornia virginica L.	pickleweed	S
**Salsola tragus* L.	Russian thistle	H
Suaeda taxifolia (Standley)Standley	woolly sea-blite	S
Cistaceae - Rock-Rose Family		
**Cistus incanus* L.	purple rock-rose	N
Convolvulaceae - Morning-Glory Family		
Cressa truxillensis Kunth.	alkali weed	S
Euphorbiaceae - Spurge Family		
**Chamaesyce maculata* (L.)Small	spotted spurge	H
Fabaceae - Pea Family		
**Acacia longifolia* (Andrews)Willd.	Sydney wattle	N
Lotus nuttallianus Greene	Nuttall's lotus	F
Lotus scoparius (Nutt.)Ottley var. *scoparius*	coastal deerweed	D
**Melilotus albus* Desr.	white sweetclover	H
**Parkinsonia aculeata* L.	Mexican palo verde	N
Frankeniaceae - Frankenia Family		
Frankenia salina (Molina) I. M. Johnst.	alkali heath	S
Geraniaceae - Geranium Family		
**Erodium cicutarium* (L.)L'Hér. Ex Aition	red-stem filaree	H
Liliaceae – Lily Family		
**Aloe* sp.	aloe	N
Myoporaceae - Myoporum Family		
**Myoporum laetum* G. Forst.	ngaio	N
Myrtaceae - Myrtle Family		
**Eucalyptus* sp.	eucalyptus	E
Nyctaginaceae - Four-O'Clock Family		

Scientific Name	Common Name	Habitat
Abronia maritima S. Wats.	red sand-verbena	F
Onagraceae - Evening-Primrose Family		
Camissonia bistorta (Torr. & A. Gray) P. H. Raven	California sun cup	F
Camissonia cheiranthifolia (Spreng.)Raim. ssp. *suffruticosa* (S. Watson) P. H. Raven	beach evening primrose	F
Camissonia lewisii P. H. Raven	Lewis' evening-primrose	F
Plumbaginaceae - Leadwort Family		
**Limonium perezii* (Stapf.)Hubb	Perez rosemary	H,N
Polygonaceae - Buckwheat Family		
Emex spinosa (L.) Campdera	spiny threecornerjack	F
Eriogonum fasciculatum Benth. var. *foliolosum* (Nutt.)S. Stokes	Flat-top Buckwheat	D
Nemacaulis denudata Nutt var. *denudata*	coast woolly-heads	F
Solanaceae - Nightshade Family		
**Nicotiana glauca* Graham	tree tobacco	H
Tamaricaceae - Tamarisk Family		
**Tamarix parviflora* DC.	four-petal European tamarisk	H
Verbenaceae - Verbena Family		
**Lantana montevidens* L.	lantana	N
MONOCOTYLEDONS		
Arecaceae - Palm Family		
Washingtonia filifera (L. Linden) H. Wendl.	California fan palm	N
Juncaceae - Rush Family		
Juncus acutus L. ssp. *leopoldii* (Parl.)Snogerup	spiny rush	S
Poaceae - Grass Family		
**Avena barbata* Link	slender wild oat	H
**Bromus diandrus* Roth	ripgut grass	H
**Bromus madritensis* L. ssp. *rubens* (L.)Husn.	red brome	H
**Cortaderia jubata* (Lemoine)Stapf	pampas grass	H
**Pennisetum setaceum* (Forssk.) Chiov.	fountain grass	H
**Piptatherum miliaceum* (L.)Cosson	smilo grass	H
**Polypogon monspeliensis* (L.)Desf.	annual beard grass	H
Typhaceae - Cat-Tail Family		
Typha latifolia L.	broad-leaved cattail	N

APPENDIX 2. FAUNA SPECIES OBSERVED OR DETECTED ON-SITE

Habitat Types:

S = Southern Coastal Salt Marsh
A = Mule Fat Scrub
F = Southern Foredunes
D = Coastal Sage Scrub
N = Non-native Vegetation
E = Eucalyptus Woodland
H = Disturbed Habitat
U = Urban/Developed
O = Fly-over

Common Name	Scientific Name	Habitat
BUTTERFLIES		
Pieridae (White, Orange-tip, and Sulfur Butterflies)		
cabbage white	*Pieris rapae*	H
Nymphalidae (Brush-footed Butterflies)		
lady sp.	*Vanessa* sp.	H
REPTILES		
Phrynosomatidae		
western fence lizard	*Sceloporus occidentalis*	H
side-blotched lizard	*Uta stansburiana*	H
BIRDS		
Anatidae (Swans, Geese, and Ducks)		
mallard	*Anas platyrhynchos*	U
Ardeidae (Herons and Bitterns)		
great blue heron	*Ardea herodias*	O
great egret	*Ardea alba*	S
snowy egret	*Egretta thula*	S
Accipitridae (Hawks and Harriers)		
northern harrier	*Circus cyaneus*	H
red-tailed hawk	*Buteo jamaicensis*	O
Charadriidae (Plovers and Relatives)		
killdeer	*Charadrius vociferous*	F,N
Laridae (Gulls and Terns)		
western gull	*Larus occidentalis*	O
Forster's tern	*Sterna forsteri*	O
least tern	*Sterna antillarum*	O
Columbidae (Pigeons and Doves)		
rock pigeon	*Columba livia*	H
mourning dove	*Zenaida macroura*	H,N
Apodidae (Swifts)		
white-throated swift	*Aeronautes saxatalis*	H
Trochilidae (Hummingbirds)		
Anna's hummingbird	*Calypte anna*	N

Common Name	Scientific Name	Habitat
Corvidae (Jays, Magpies, and Crows)		
common raven	*Corvus corax*	O
Alaudidae (Larks)		
horned lark	*Eremophila alpestris*	H
Hirundinidae (Swallows)		
northern rough-winged swallow	*Stelgidopteryx serripennis*	O,H
cliff swallow	*Petrochelidon pyrrhonota*	N,H
Aegithalidae (Bushtit)		
bushtit	*Psaltriparus minimus*	D,N
Mimidae (Mockingbirds and Thrashers)		
northern mockingbird	*Mimus polyglottos*	N
Sturnidae (Starlings)		
European starling	*Sturnus vulgaris*	N
Emberizidae (Sparrows, Blackbirds and Relatives)		
california towhee	*Pipilo crissalis*	D
Icteridae (Blackbirds, Meadowlarks, Orioles, and Relatives)		
western meadowlark	*Sturnella neglecta*	H
Fringillidae (Finches)		
house finch	*Carpodacus mexicanus*	H,N
MAMMALS		
Leporidae (Rabbits and Hares)		
desert cottontail	*Sylvilagus audubonii*	N
Sciuridae (Squirrels, Chipmunks, and Marmots)		
California ground squirrel	*Spermophilus beecheyi*	F,D,H